

Fuel system - Troubleshooting



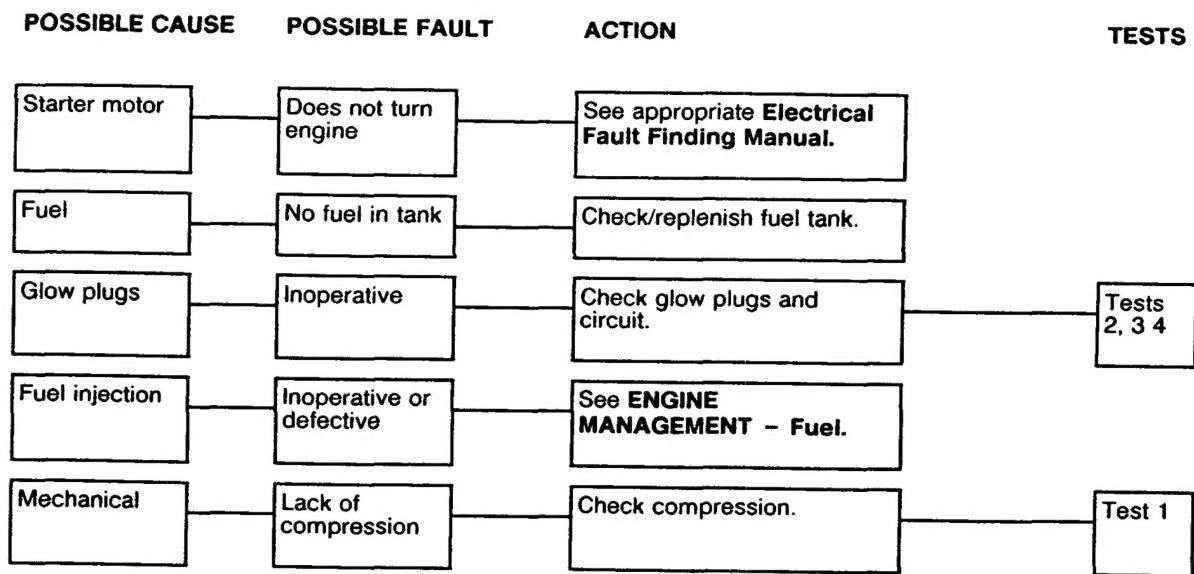
FAULT FINDING

COMPLAINT

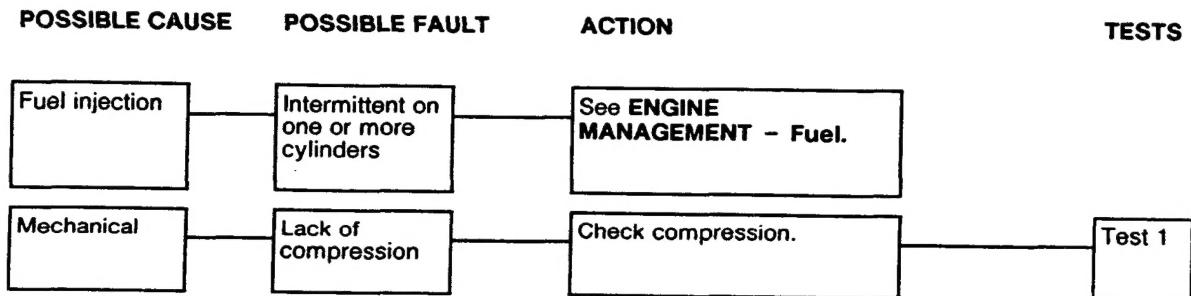
Engine will not start
Engine misfires/will not idle correctly
Engine lacks power
Excessive exhaust smoke
Oil pressure warning light stays on
Abnormal noise from engine top end

Fuel system - Troubleshooting

COMPLAINT – Engine will not start



COMPLAINT – Engine misfires/will not idle correctly

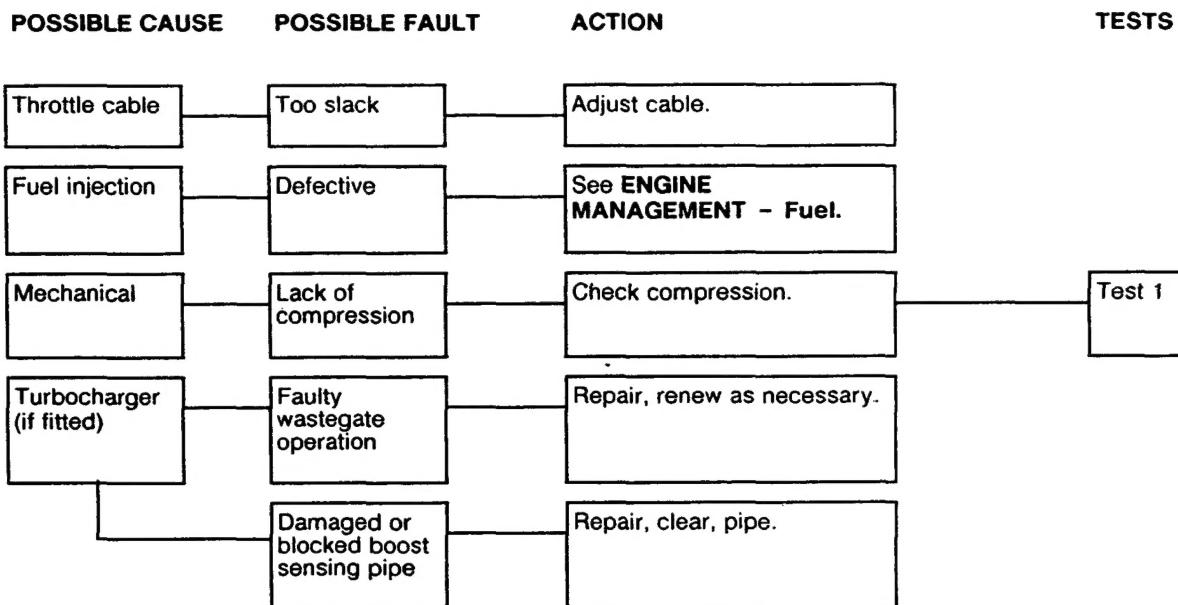


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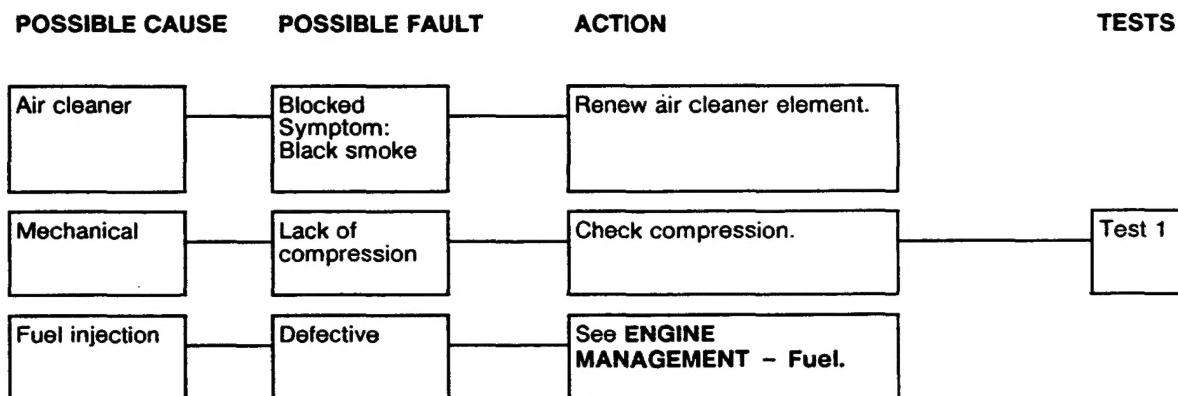


COMPLAINT - Engine lacks power

▲ Note: Ensure brakes are not binding

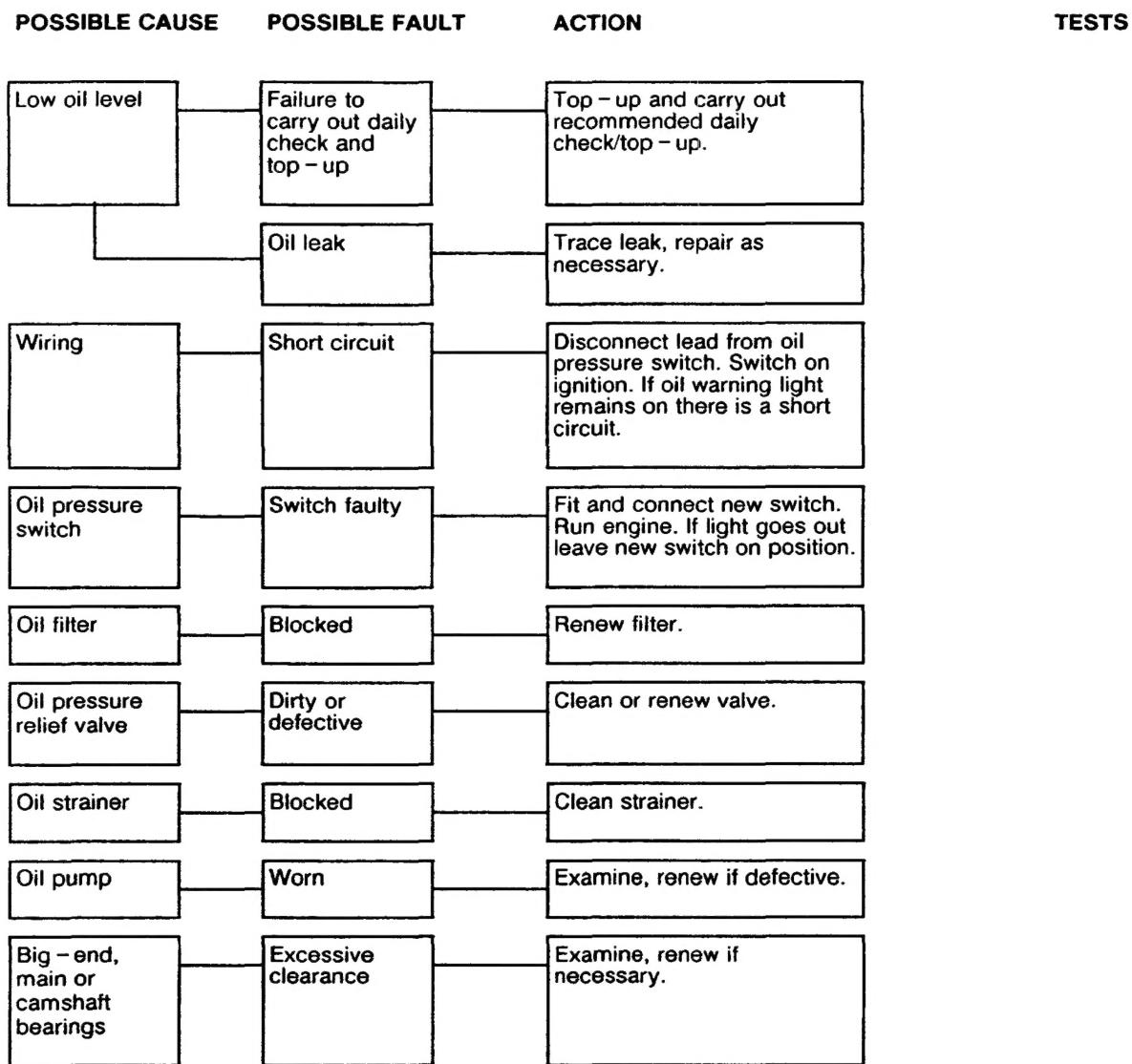


COMPLAINT - Excessive exhaust smoke



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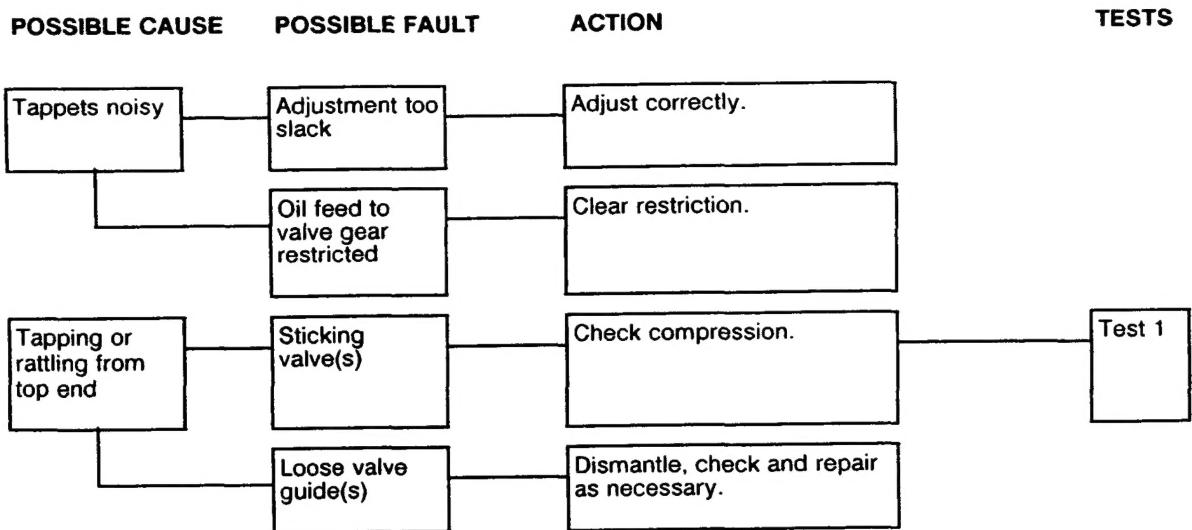
COMPLAINT – Oil pressure warning light stays on



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COMPLAINT – Abnormal noise from engine top end



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Test 1 Compression

▲ Note: This test can only be carried out with the battery in good condition.

1. Start engine (if possible), run it until it reaches normal running temperature, stop engine.
2. Disconnect lead from shut-off solenoid on injection pump.
3. Remove glow plugs.

4. Fit adaptor of a diesel compression tester into No. 1 glow plug position. Connect compression tester.
5. Operate starter motor until gauge reaches its highest reading, record reading and remove adaptor.
6. Repeat operations 4 and 5 for remaining cylinders and compare readings.
All reading should be within 10% of each other and should all be above 25 ± 5 bar, 370 ± 75 lbf/in².

Test 2 Glow plug in glow plug tester (Tester DX900 illustrated)

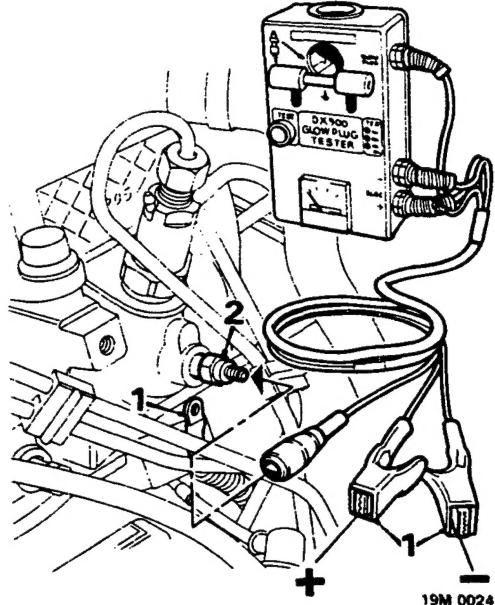
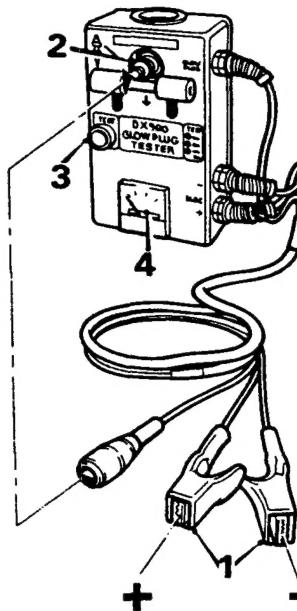
1. Connect red lead to battery positive terminal and black lead to negative terminal.
2. Fit glow plug into tester and retain with spring loaded bar. Connect yellow lead to threaded portion of glow plug.
3. Press test button and note ammeter reading. Keep button depressed and glow plug tip should start to glow after 5 seconds.

▲ CAUTION: The glow plug tip must glow first. If it fails to do so replace glow plug.

4. Ammeter reading should show initial current draw of 25 amps, which should fall to 12 amps after 20 seconds.

Test 3 Glow plug in engine

1. Switch off master switch and disconnect electrical leads from glow plug (s) to be tested. Connect red lead of glow plug tester to battery positive terminal and black lead of tester to negative terminal.
2. Connect yellow lead of tester to threaded portion of glow plug. Press test button and note ammeter reading. Keep button depressed and note time taken for ammeter reading to stabilise. Compare results with figures given in Test 2.



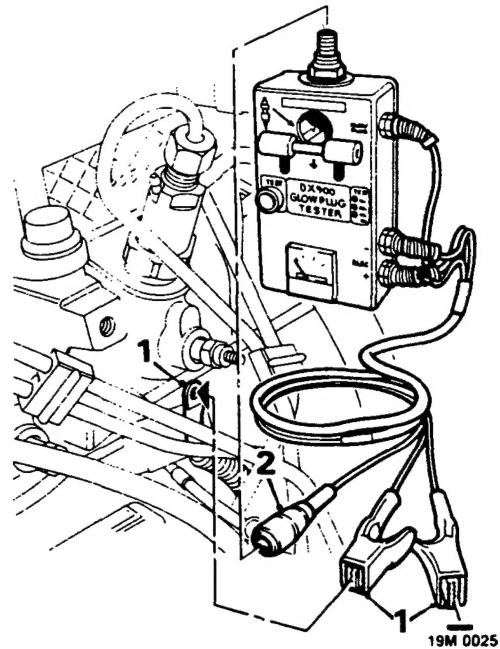
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Test 4

Relay and timer circuit

1. Switch off master switch and disconnect supply lead from glow plugs. Connect red lead of glow plug tester to supply lead and connect black lead of tester to battery negative terminal.
2. Connect yellow lead of tester to a spare glow plug fitted in top of tester. Press and hold test button while switching on master switch and note ammeter reading. The reading should start to fall towards stabilised figure and drop to zero as timer breaks circuit.



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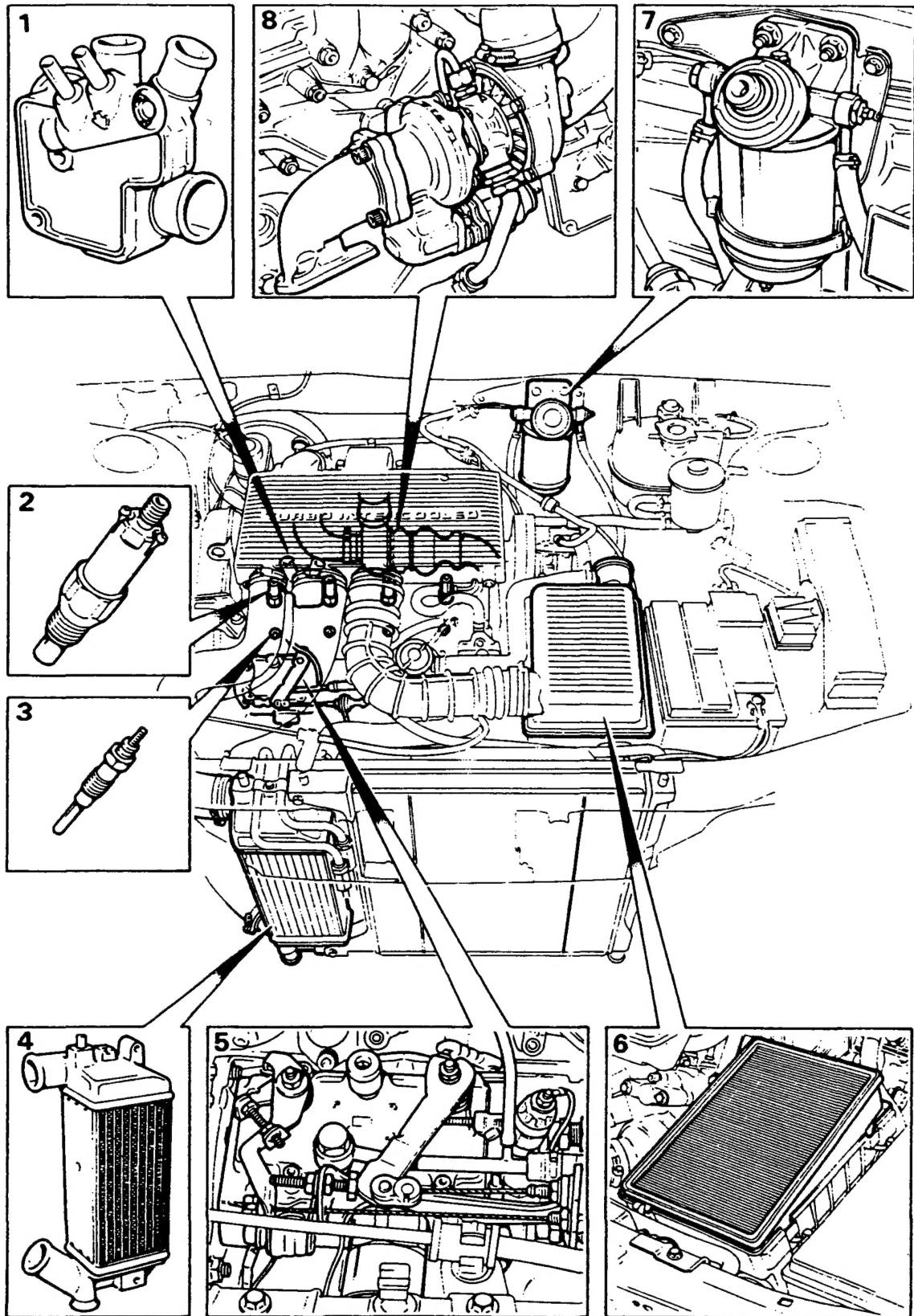
COMPLAINT

Engine will not start
Engine misfires/will not idle correctly
Engine lacks power
Excessive exhaust smoke

COMPONENT LOCATION

- | | |
|--|---|
| 1. Fuel heater
2. Fuel injector
3. Glow plug
4. Intercooler (turbo charged engine only) | 5. Fuel injection pump
6. Air cleaner
7. Fuel filter
8. Turbocharger |
|--|---|

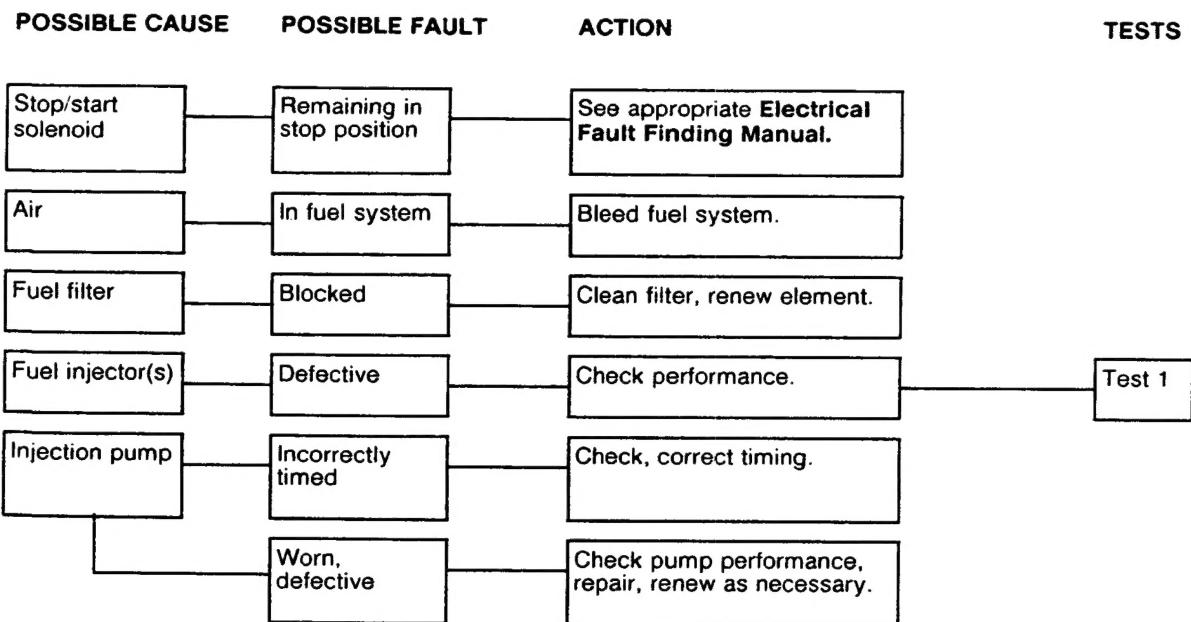
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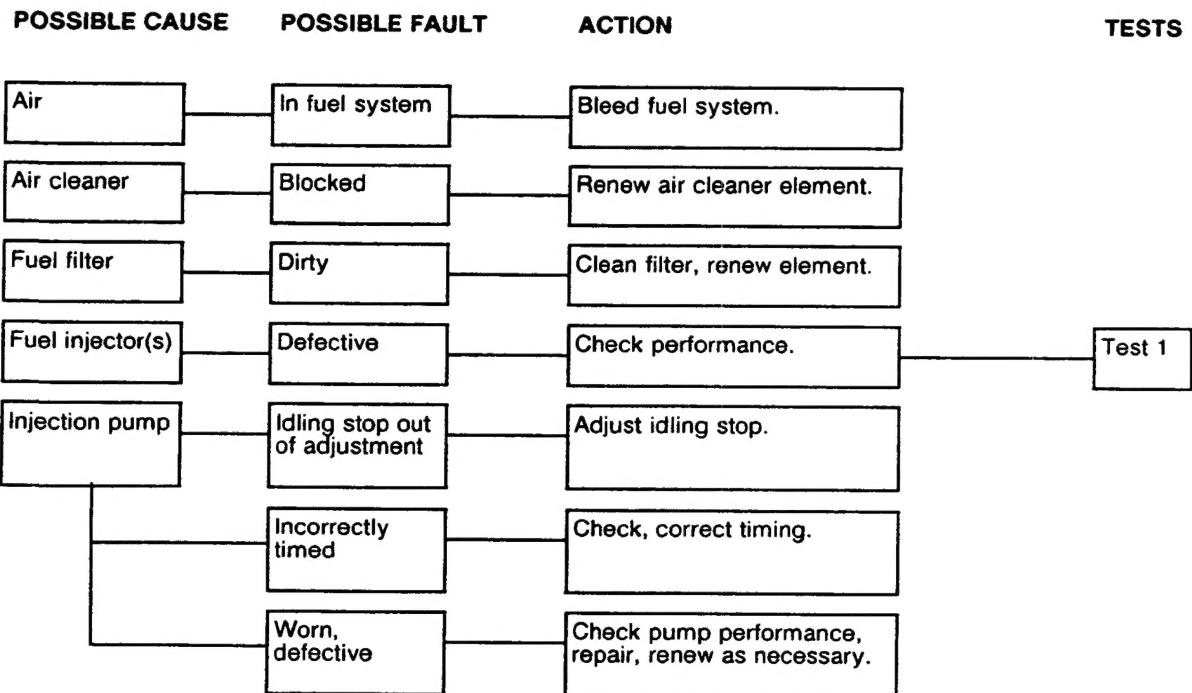
BRM 3854

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COMPLAINT – Engine will not start



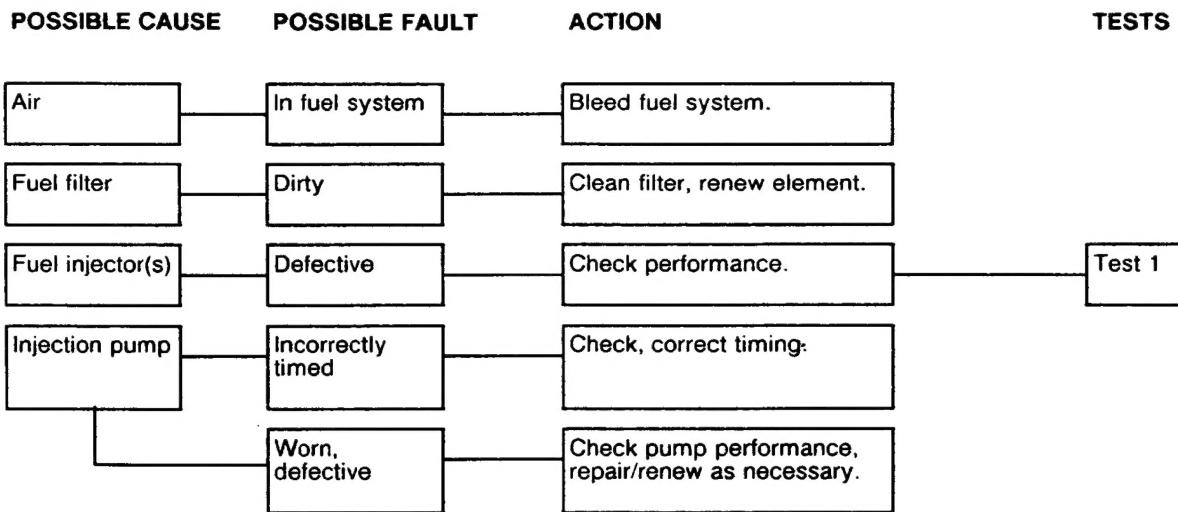
COMPLAINT – Engine misfires/will not idle correctly



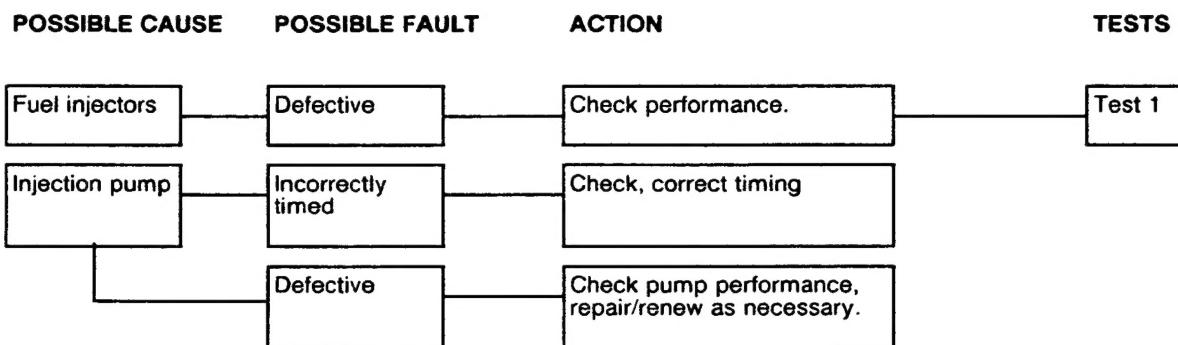
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COMPLAINT – Engine lacks power



COMPLAINT – Excessive exhaust smoke



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Test 1 Injectors (Injector tester DX710 illustrated)

▲ Note: To identify faulty injector, run engine at idle speed. Slacken and tighten in turn each injector high pressure union. No change in engine speed while a particular union is loose, indicates that injector not performing correctly.

1. Engine stopped, remove suspect injector from engine and connect to tester.
2. Checking injector opening pressure:
Rotate tester handle and note pressure at which injector operates, it should be:
Normally aspirated engine = 125 ± 5 bar.
Turbocharger engine = 130 ± 5 bar.
3. Checking spray pattern:
Rotate tester handle fast enough to operate injector 4 or 5 times per second. Spray pattern should be finely atomised, uniform in shape, and should not contain splits or solid fuel. A slight centre core is permissible.
4. Checking for dribble:
Wipe injector nozzle dry. Slowly rotate tester handle to create a pressure 10 bar below injector opening pressure. Hold pressure for 10 seconds, check nozzle. It should be dry.
5. If injector fails to meet any requirement in 2, 3 or 4, renew injector.

